REAL ESTATE ANALYSTS INC.

The Real Estate ANALYST

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1941

Roy Wenzlick
Editor

A concise easily digested periodic analysis based upon scientific research in real estate fundamentals and trends....Constantly measuring and reporting the basic economic factors responsible for changes in trends and values.....Current Studies ..... Surveys....Forecasts

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VOLUME X

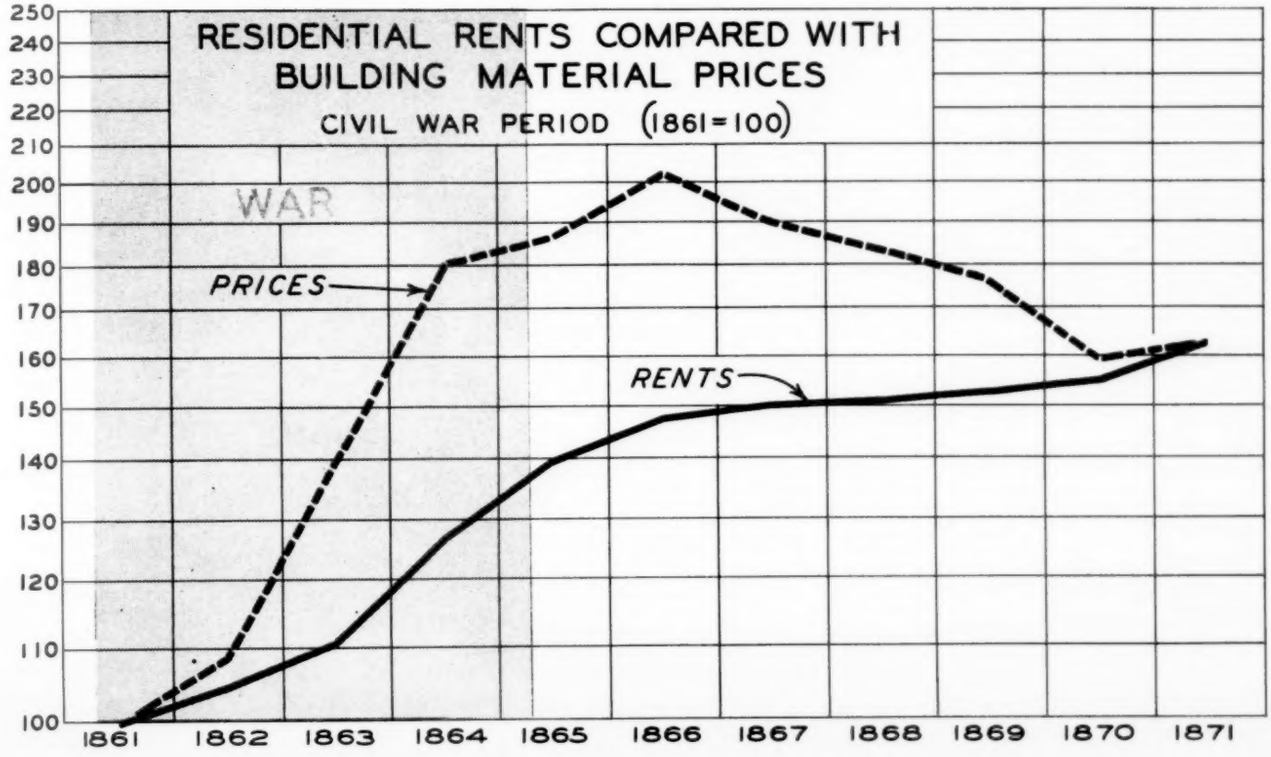
REAL ESTATE ECONOMISTS, APPRAISERS AND COUNSELORS

RESIDENTIAL RENTS IN WAR PERIODS

DURING the last ninety years in the United States residential rents have been fairly stable with the exception of two violent upheavals, both caused by wars. In the eighteen sixties, the Civil War period, rents rose sharply in most cities and remained at relatively high levels until the latter part of the depression which started in 1873. Again in the World War and the period that followed, rents rose rapidly and maintained the higher levels until the great depression starting in 1929.

The upheavals caused by these wars are worthy of study today as we are in a period identical in some ways with the first World War period, and not dissimilar from some aspects of the Civil War. While of course there are many different factors operating today, some of the causes which were largely responsible for the rises then are present now in exaggerated form. Will residential rents rise again as they did in these other wars, bringing on a general real estate inflation? Why did they rise before? Will they rise for the same reason again?

The answers to these questions are of primary importance at the present time to those responsible for the enactment and administration of price legislation, to financial institutions, real estate owners and operators, economists

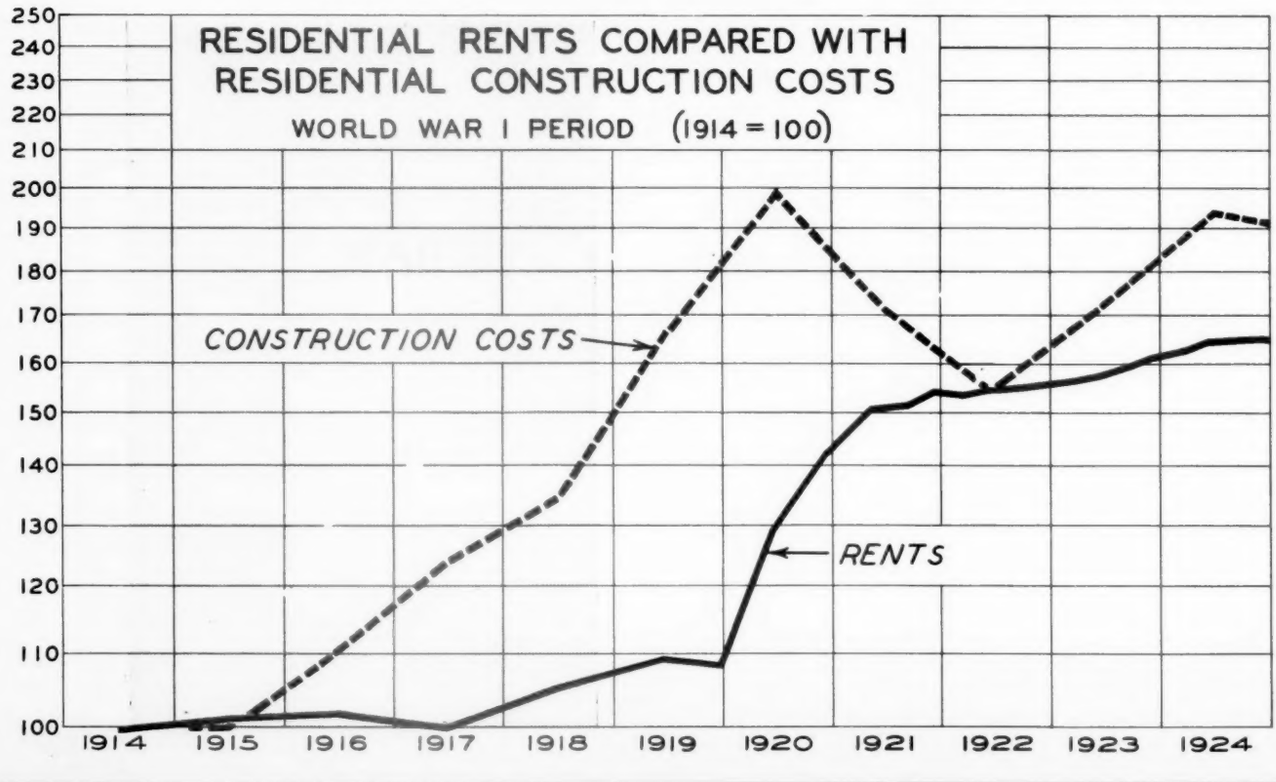


and sociologists. In a larger sense they are of importance to everyone, as a real estate inflation will in the end affect every individual and every business in the country.

In an effort to answer these questions we have prepared three charts showing the reactions of rents in these war periods. The first shows the relationship of residential rents and building material prices in the period from 1861 to 1871. For the purpose of this study the levels of both items were considered as 100 in 1861, the year in which the Civil War started, and all other years are expressed as percentages above this point. The figures on rents are compiled from a study made in 1880 by the Bureau of the Census. The index on building material prices is based on the compilations of G. F. Warren and Frank Pearson. We would rather have an index of actual construction costs but there are none available for this period.

It will be noticed immediately that building material prices advanced faster than rents; for instance, in 1863 building materials were approximately 40% above their 1861 level while rents had advanced only a little more than 10%. By 1866, the year following the close of the war, building materials had more than doubled in price while rents had advanced by less than 50%. By 1871 rents and building material prices were in approximate agreement at slightly more than 60% above the pre-war level.

The first question we must answer is, "Why did building materials rise as they did?" There wasn't a great deal of new building going on at the time which would have increased the demand for building materials sharply enough to cause the rapid rise shown on our chart. The only explanation of this rise is the general inflation which reduced the purchasing power of money. This was the period in which greenbacks were being issued by the government to help pay for the Civil War. But if this was the case, why didn't the issue of greenbacks affect rents at the same time and to the same extent? The only answer is that at the time there was apparently an oversupply of dwelling



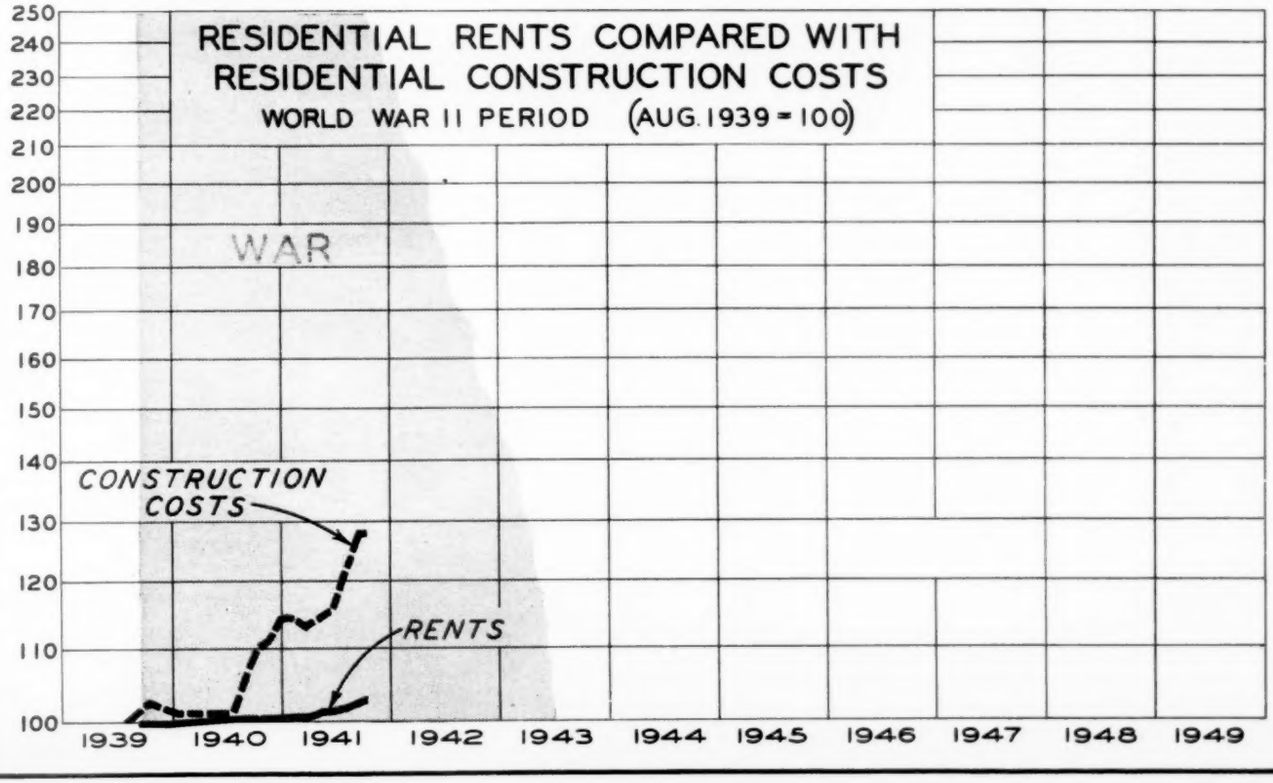
units and the large vacancy caused landlords to bid against each other for tenants. As pointed out in the "As I See It" Bulletin for November, at any given time rent levels are determined by the relationship of supply and demand. Rents did not rise, therefore, until the retardation of building costs, due to increased building costs, had absorbed the vacancy. Then rents rose and they continued to rise until their rise was equal to the new level of building costs.

It is interesting to note that it took ten years for the maladjustment between rents and building material costs caused by the Civil War to subside. In the end, however, it was apparently the cost of new building that won out in bringing about the rise in rents.

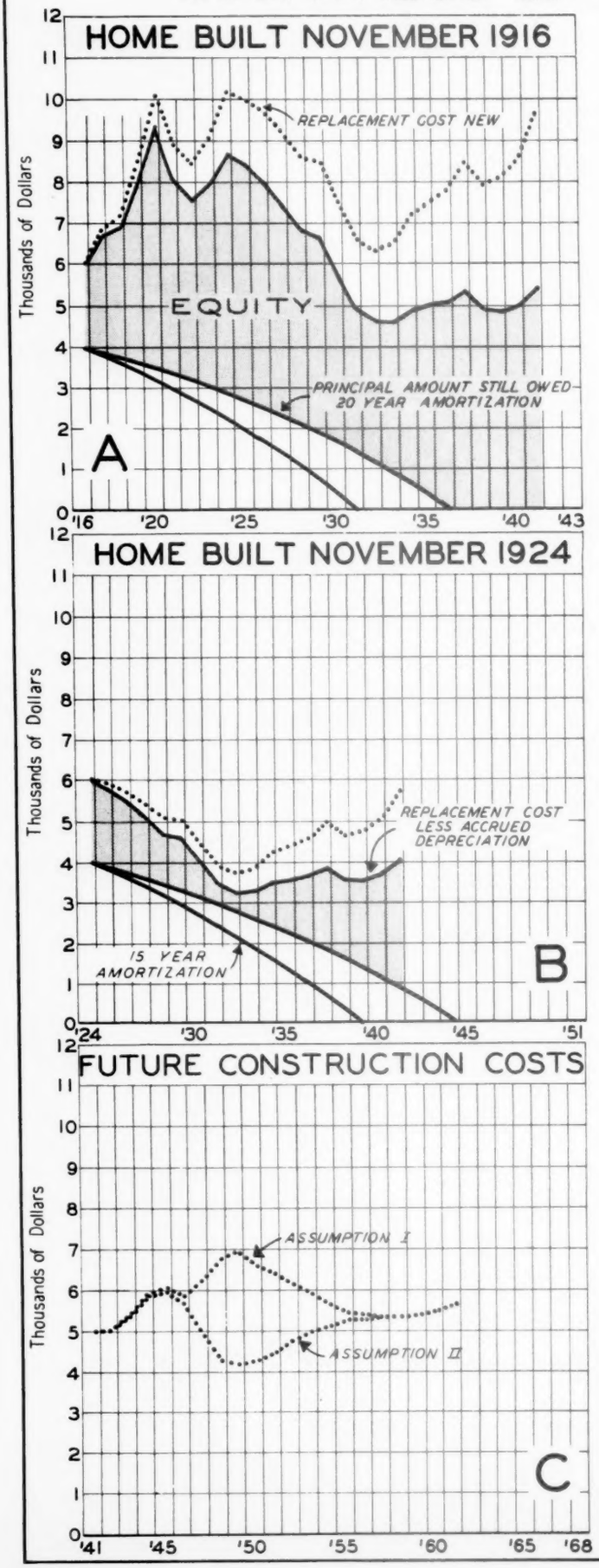
The chart opposite shows the behavior of rents and the cost of construction during the World War I period. The rent figures used in this and the following chart are the figures of the Bureau of Labor Statistics and the building cost figures are for the guinea pig house of Real Estate Analysts, Inc. It will be noticed that during this period it took much longer for rents to get started, but that after they did start to rise, they rose faster than they did during the Civil War period. In eight years the two lines came back together, but then separated again with a further rise in building costs.

The probable reason for the slower start in this period was the fact that cities were growing much slower than they were seventy years earlier. The significant thing, however, is that rents again followed construction costs up with a lag.

The chart below shows the same comparison for the present period. It certainly looks as if we can expect the same reactions that we experienced before - which would indicate that rents will probably not reach the highest point until five or six years from now. Rent control will be tried in a number of cities during this period and will not prove satisfactory.



SOUNDNESS OF 66⅔% LOANS

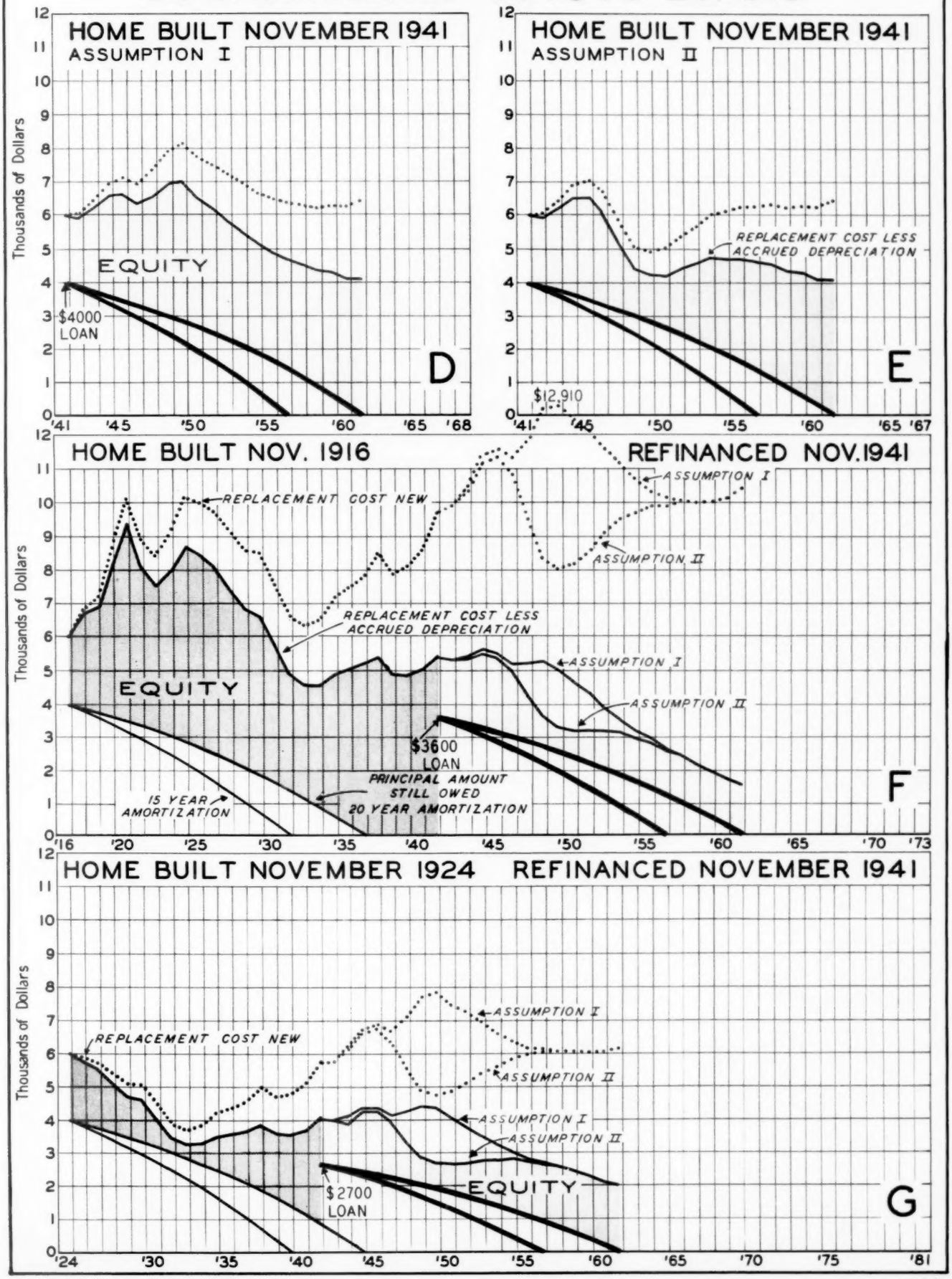


SEVERAL of our clients have inquired about the soundness of loans on residential properties not exceeding two-thirds of their appraised value, with amortization periods not exceeding twenty years, and also whether the soundness of such loans would apply to old as well as to new properties.

Two distinct considerations control the soundness of mortgage loans. (1) The accuracy with which the value of the property is appraised at the time of the loan and whether the applicant for the loan has the character and financial responsibility necessary to carry out the terms of the loan. (2) The percentage of appraised value which shall be loaned and the terms on which the loan shall be repaid to the mortgagee. The first consideration is the function of the appraiser and of the credit rating bureau. The appraiser should be competent and independent of any influence of the mortgagee and should not be interested in whether the loan is approved or not - regardless of competition for loans. The second consideration is the function of the mortgagee who must forecast those economic changes that probably will occur in the future and may cause future value of the property to drop below the amount still due on the loan. The services rendered by the mortgage banker are highly professional.

Before they are put in service, machines and materials generally are tested under conditions considered more severe than could reasonably be expected in actual service in order to insure their future performance. This same method has been followed in attempting to determine the soundness of two-thirds mortgage loans. Changing economic conditions experienced in the past have been used and other changes have been assumed in order to determine whether the two-thirds mortgage loans will safely ride the economic storms of the future. (cont. page 308)

SOUNDNESS OF 66⅔% LOANS



(cont. from page 306)

On the charts that accompany this study, black lines represent actual figures and red lines represent assumed figures. The value given on the charts represents fair market value and is estimated from the value of the land plus the reproduction cost of the improvements, less the depreciation accrued at the rate of 2% per year of expended life of the improvements. The shaded portions on the charts represent the equity or that portion of the value above the amount of the loan due on a twenty-year amortization base. On all charts the amount of loan due on a fifteen-year amortization basis is also given. It will be noticed that in each study a house originally costing $5000 has been used. It is self-evident that the same house has not been used in each study; $5000 would have built a much smaller house in 1924 than in 1916.

Chart A shows a house built in November 1916 - the house costing $5000; the lot, $1000; the total property, $6000. A loan of $4000, or two-thirds of its value, is assumed. Actual variations of construction costs are used for the next twenty-five years. It will be noticed that the equity for each year throughout the twenty-year loan period is greater than the original equity in November 1916. November 1916 was the 27th month of World War I as November 1941 is the 27th month of World War II. If it were assumed that the coming twenty-five years would duplicate the fluctuations of the twenty-five years following November 1916, Chart A would show all two-thirds loans remarkably safe at this time. Such an assumption is too optimistic to be considered a test of soundness.

Chart B shows a house built in November 1924 (the house costing $5000; the lot, $1000; the total property, $6000).A mortgage loan of $4000 is assumed on November 1924. Actual variations in construction costs were used during the seventeen-year period covered by the chart. Again there is an equity throughout the term of the loan, although by 1932 the loan represents 85% of the value of the property. This is a very severe test, as construction costs started to decline right after the house was completed in November 1924 and continued to drop until November 1932, when the house that cost $5000 to build in November 1924 could be built for about $3000. It seems improbable that a similar collapse can occur within the next eight years.

On Chart C two assumptions are made as to what will probably happen to construction costs during the next twenty years. Assumption I is based upon a general rise in prices due to inevitable inflation. Assumption II is based upon a decline of prices due to the increases of production capacity resulting from the emergency. Real Estate Analysts believes Assumption I is the more probable.

Charts D and E assume a house built in November 1941 (the house costing $5000 to build; the lot, $1000; the total property, $6000.) A loan of $4000 is assumed. Chart D shows the fluctuations of construction costs according to Assumption I-Chart C; and Chart E shows the fluctuations of construction costs according to Assumption II, Chart C. Under both assumptions there is a substantial equity throughout the twenty-year term of the loan.

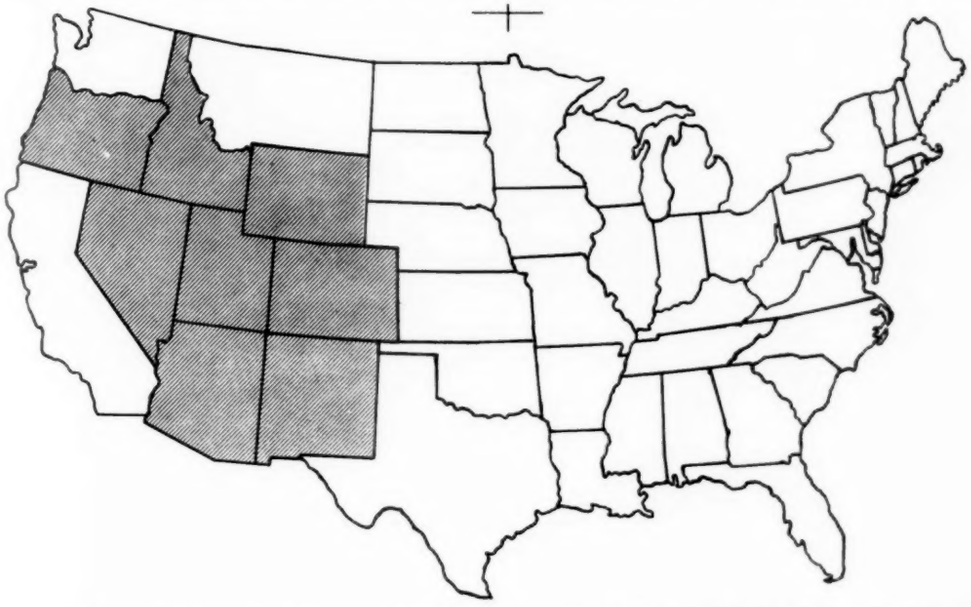
Chart F shows a house built in November 1916 (the house costing $5000;the lot, $1000; the total property, $6000. See Chart A.) In November 1941 the

(cont. on page 315)

DEFENSE EXPEDITURES

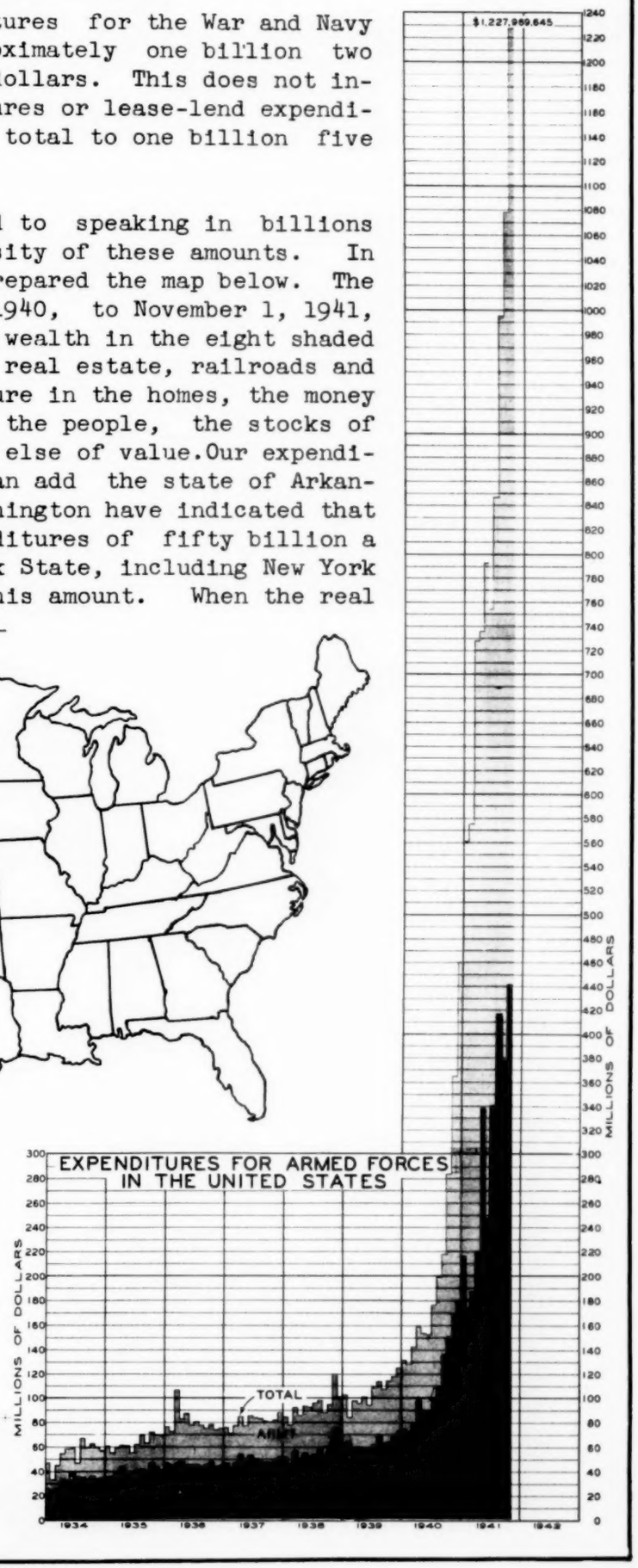
DURING October defense expenditures for the War and Navy Departments amounted to approximately one billion two hundred twenty-eight million dollars. This does not include many other defense expenditures or lease-lend expenditures, which would increase the total to one billion five hundred twenty-seven million.

We have become so accustomed to speaking in billions that we do not realize the immensity of these amounts. In order to give some idea, we have prepared the map below. The money actually spent from July 1, 1940, to November 1, 1941, is equivalent to the total of all wealth in the eight shaded states. "All wealth" includes the real estate, railroads and other public utilities, the furniture in the homes, the money in the banks and in the pockets of the people, the stocks of goods in the stores and everything else of value. Our expenditures during November will more than add the state of Arkansas to the list. Officials in Washington have indicated that at the peak we could expect expenditures of fifty billion a year. The wealth of all of New York State, including New York City, is estimated at just about this amount. When the real



amount of these defense expenditures is realized, the impossibility of preventing inflation becomes apparent. Price rises may be delayed and slowed down but they cannot be prevented. The debts of this war can only be paid in depreciated currency.

Inflation will affect real estate values considerably during the next twenty-five years. However, there is no investment that is absolutely inflation proof.



FHA

THE charts to the right show the volume of business done by the Federal Housing Administration classified in several ways. The top chart expresses the monthly volume as a percentage above or below the corresponding month of a year ago. On this chart and the one below, mortgages selected for appraisal are shown by the black line and mortgages accepted for insurance are shown by the red line.

It will be noticed that the last several months have shown figures below the corresponding months of a year ago. This is the result of the restrictions on non-defense building, and in our opinion the FHA will continue for a number of months below last year's level.

The second chart shows the actual dollar volume by months since 1935. These figures have been decreasing as a rule for the last six months.

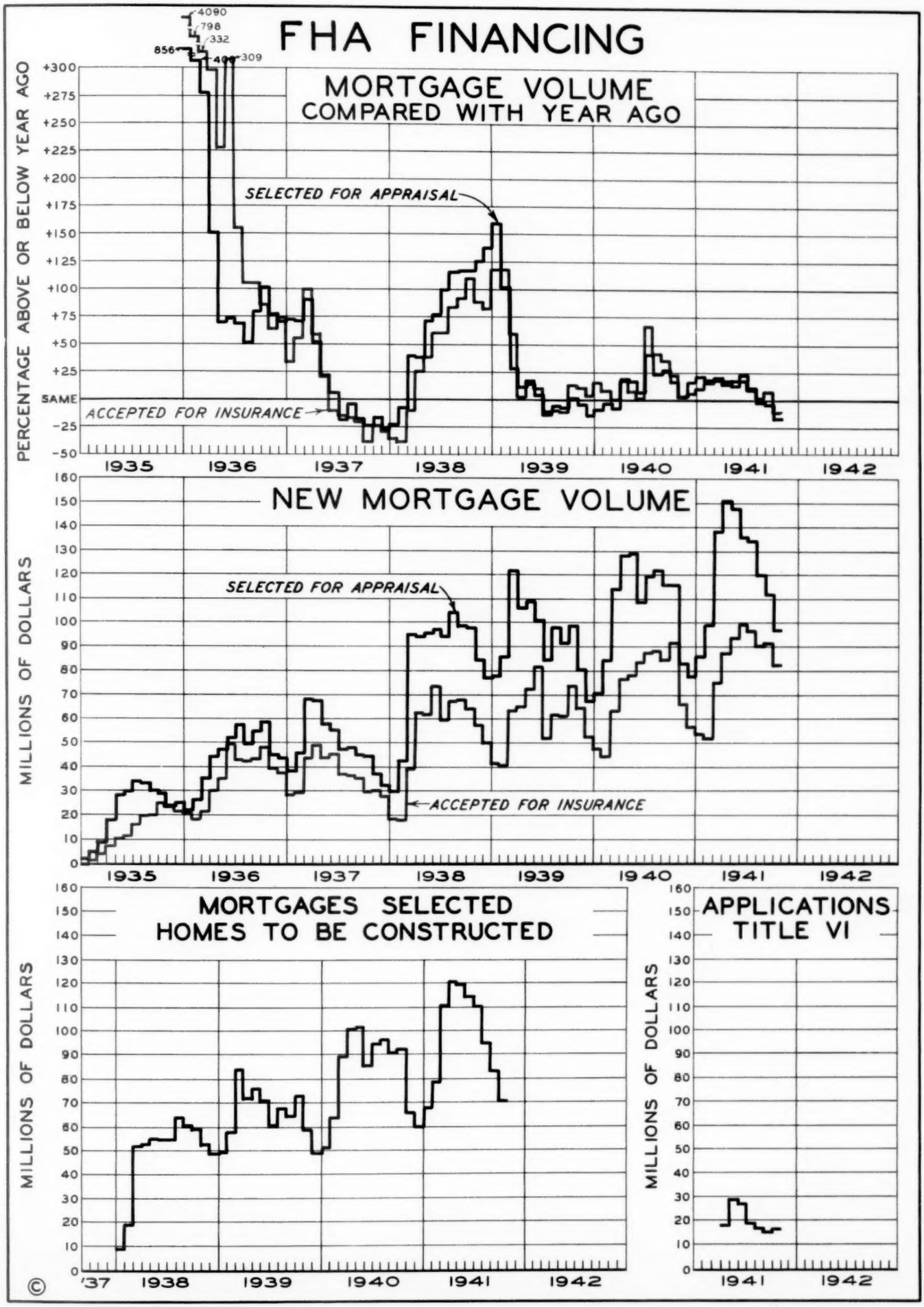
The chart in the lower left hand corner of the page opposite shows the monthly dollar figures on mortgages selected covering homes to be constructed. This line has been dropping since last April and is now falling at an accelerated rate. It is now running about twenty-five percent below a year ago.

The chart in the lower right hand corner shows the dollar volume of new mortgage applications under the provisions of Title VI of the Act. It will be remembered that mortgages under this portion of the Act can be made only in areas that have been especially designated by the President.

THE REAL ESTATE ANALYST
INDEX OF RESIDENTIAL RENTS

1941

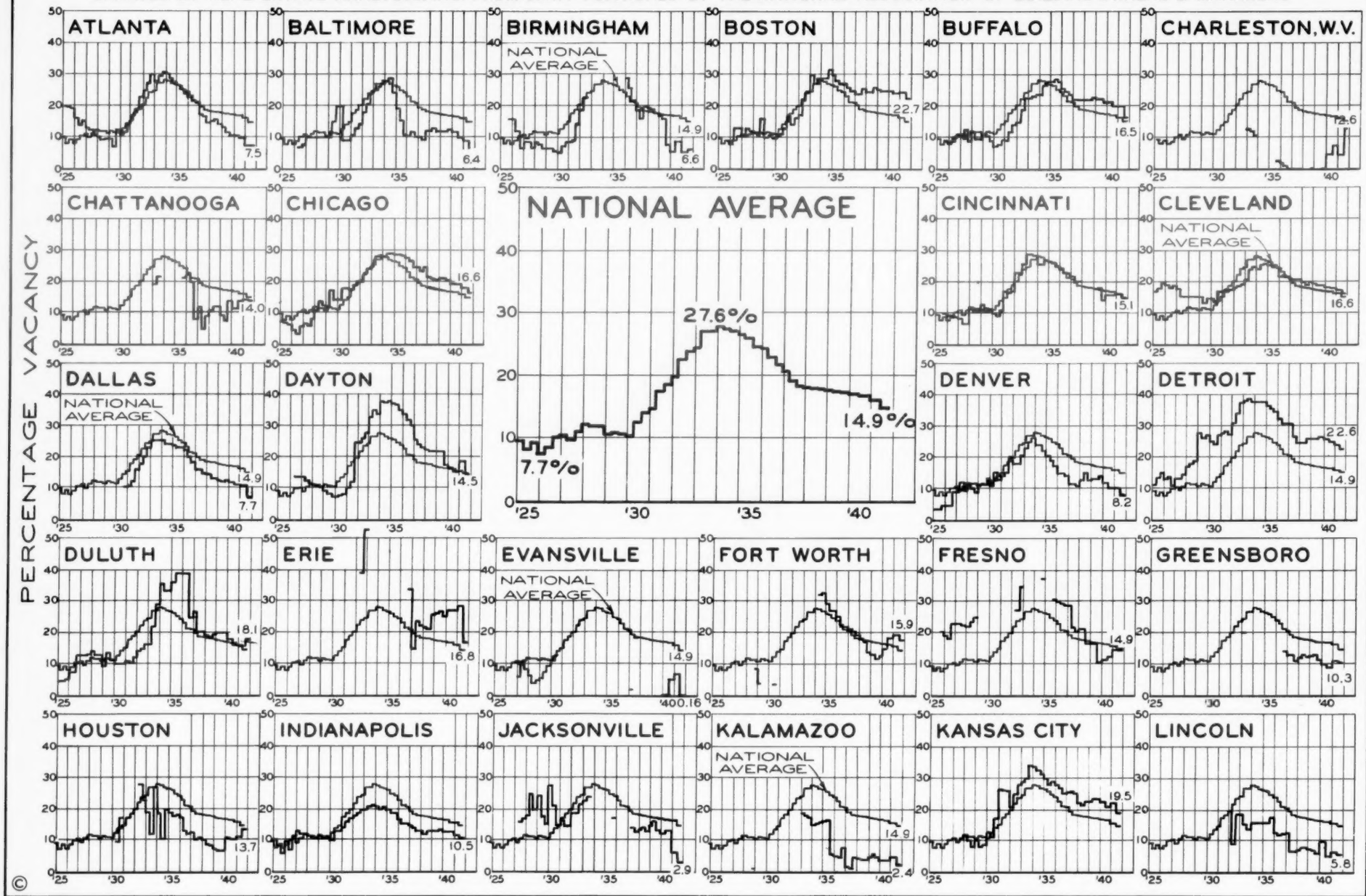
	May		June		July		Aug.		Sept.		Oct.		Nov.	
	Res.	Apt.	Res.	Apt.	Res.	Apt.	Res.	Apt.	Res.	Apt.	Res.	Apt.	Res.	Apt.
National Index	$8.64	$11.88	$8.71	$11.88	$8.78	$11.90	$8.86	$11.96	$8.94	$12.01	$8.98	$12.06	$9.01	$12.10
Atlanta	8.15	11.30	8.25	11.30	8.32	11.30	8.44	11.44	8.49	11.43	8.49	11.53	8.54	11.60
Baltimore	8.09	10.70	8.25	10.76	8.46	10.91	8.61	11.00	8.86	11.18	8.91	11.30	8.80	11.40
Birmingham	6.76	10.02	6.79	10.01	6.80	10.01	6.97	10.03	7.15	10.03	7.35	10.02	7.54	10.09
Boston	8.53	14.49	8.52	14.45	8.65	14.61	8.73	14.69	8.86	14.91	8.98	14.96	9.04	14.98
Chicago	11.41	13.01	11.70	13.09	11.67	13.20	11.61	13.42	11.86	13.40	11.83	13.58	11.80	13.71
Cincinnati	10.11	13.10	10.40	12.98	10.42	12.99	10.48	13.00	10.60	13.01	10.59	13.10	10.59	13.11
Cleveland	10.04	13.09	10.25	13.15	10.36	13.29	10.46	13.42	10.53	13.52	10.64	13.61	10.73	13.73
Columbus	7.29	11.05	7.41	11.02	7.54	11.03	7.70	11.02	7.75	11.01	7.76	11.06	7.80	11.10
Denver	7.65	12.43	7.75	12.41	7.84	12.40	7.91	12.40	7.90	12.41	7.86	12.42	7.89	12.41
Detroit	9.66	12.01	9.80	12.10	9.96	12.19	9.73	12.32	10.10	12.58	10.02	12.62	10.00	12.66
Houston	7.87	10.30	7.88	10.23	7.91	10.20	7.97	10.19	8.02	10.19	8.04	10.19	8.09	10.15
Kansas City	6.25	7.13	6.39	7.12	6.46	7.19	6.51	7.23	6.53	7.35	6.48	7.48	6.43	7.63
Los Angeles	10.93	11.29	10.92	11.29	10.91	11.30	10.98	11.26	10.99	11.30	11.03	11.30	11.19	11.48
Milwaukee	9.05	10.87	9.05	10.86	9.09	10.89	9.20	10.88	9.25	10.98	9.41	11.13	9.38	11.16
Minneapolis	8.14	10.23	8.14	10.22	8.25	10.23	8.29	10.35	8.21	10.30	8.20	10.26	8.15	10.25
New Orleans	8.61	10.36	8.78	10.45	8.91	10.40	9.05	10.38	9.07	10.33	9.14	10.36	9.25	10.41
New York	12.40	18.99	12.42	19.08	12.40	19.16	12.60	19.35	12.70	19.39	12.77	19.39	12.69	19.29
Omaha	7.01	11.54	7.13	11.55	7.24	11.50	7.30	11.45	7.36	11.60	7.43	11.71	7.46	11.71
Philadelphia	7.16	14.02	7.36	14.18	7.38	14.26	7.46	14.25	7.50	14.30	7.58	14.25	7.54	14.21
Pittsburgh	9.31	12.28	9.28	12.33	9.28	12.36	9.31	12.58	9.30	12.69	9.40	12.69	9.44	12.29
Richmond	8.47	11.49	8.42	11.52	8.36	11.50	8.45	11.53	8.34	11.43	8.30	11.36	8.41	11.30
Saint Louis	8.38	10.90	8.48	10.92	8.60	10.89	8.91	11.00	9.03	11.03	9.09	11.10	9.15	11.29
Salt Lake City	7.83	10.80	7.84	10.78	7.91	10.70	8.07	10.80	8.10	10.70	8.19	10.69	8.17	10.90
San Francisco	9.86	13.01	9.89	13.00	9.91	12.98	9.95	12.98	9.90	12.91	9.90	12.90	9.85	12.93
Seattle	8.05	11.97	8.09	11.92	8.20	12.00	8.17	12.13	8.41	12.30	8.53	12.57	8.87	12.79
Tulsa	7.29		7.27		7.30		7.48		7.46		7.47		7.53	


FHA FINANCING
MORTGAGE VOLUME
COMPARED WITH YEAR AGO
PERCENTAGE ABOVE OR BELOW YEAR AGO
4090
798
332
856
309
+300
+275
+250
+225
+200
+175
+150
+125
+100
+75
+50
+25
SAME
-25
-50
SELECTED FOR APPRAISAL
ACCEPTED FOR INSURANCE
1935
1936
1937
1938
1939
1940
1941
1942
NEW MORTGAGE VOLUME
MILLIONS OF DOLLARS
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
SELECTED FOR APPRAISAL
ACCEPTED FOR INSURANCE
MORTGAGES SELECTED
HOMES TO BE CONSTRUCTED
MILLIONS OF DOLLARS
'37
1938
1939
1940
1941
1942
APPLICATIONS
TITLE VI
MILLIONS OF DOLLARS
1941
1942
©

OFFICE BUILDING VACANCY IN PRINCIPAL CITIES

CHARTED BY REAL ESTATE ANALYSTS, INC. FROM DATA FURNISHED BY THE NATIONAL ASSOCIATION OF BUILDING OWNERS & MANAGERS

PERCENTAGE VACANCY



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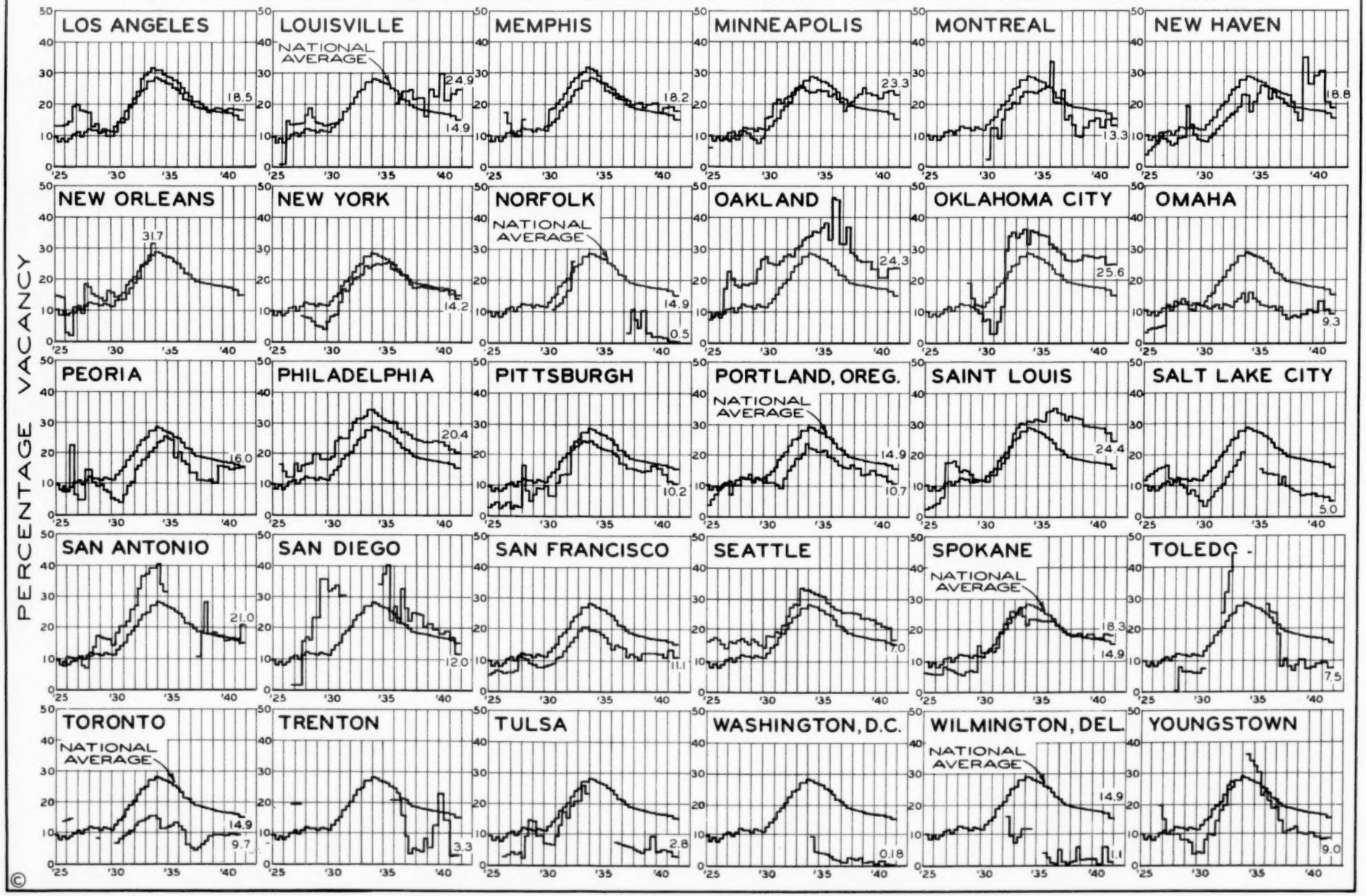
OFFICE BUILDING VACANCY IN PRINCIPAL CITIES

CHARTED BY REAL ESTATE ANALYSTS, INC. FROM DATA FURNISHED BY THE NATIONAL ASSOCIATION OF BUILDING OWNERS & MANAGERS



REAL ESTATE TRANSFERS IN PRINCIPAL CITIES

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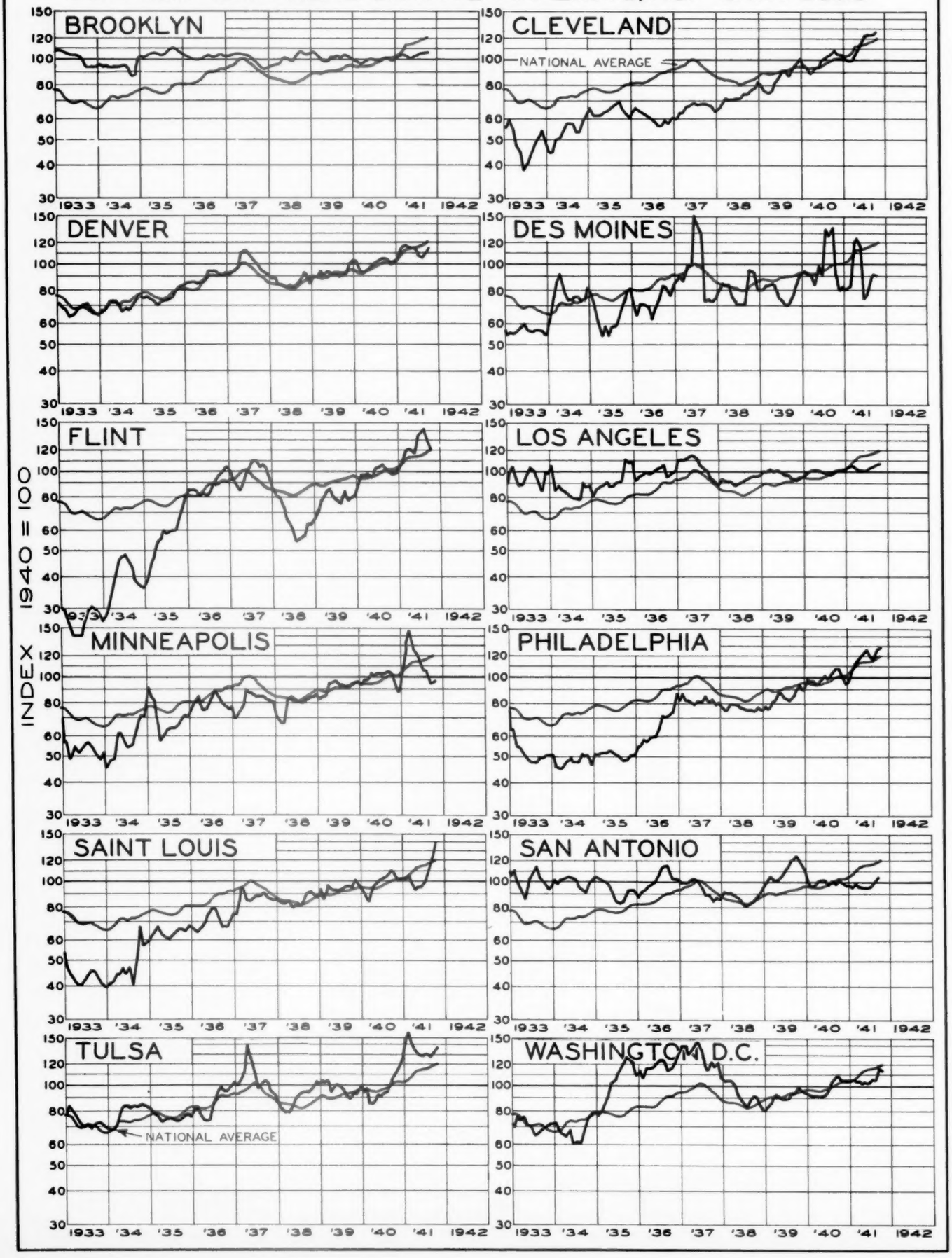


HAS THE RISE OF CONSTRUCTION COSTS STOPPED?

FROM the study on the center spread of the Executive Digest it will be noticed that construction costs on the guinea pig residence have remained the same insofar as the total is concerned for the last three months. It will also be noticed from the chart on the back of this report showing the fluctuations of building materials at wholesale that there has been little change in the aggregate price in the last six weeks. Does this indicate that the price control efforts of the Government are working?

In our opinion it indicates that they are a retardent but not a preventative. We have said many times that the upward movement would be interrupted and that we thought the first interruption would come this fall or winter. There are many reasons for the present sideways movement. One of course is the pressure put on various industries by Leon Henderson. This is delaying increases which will come later. The curbs and ceilings will work as long as costs have not increased to the point where a loss would be involved if operation at that price were continued. That point will be reached inevitably as the cost of living and wages chase each other up the hill.

It is monthly becoming more expensive to operate a business. We think this is unavoidable in view of the immensity of the defense program we have undertaken. 1942 will see many costs increase sharply, and the executive will be faced with the alternative of raising prices or going out of business. Any business can stand losses for a while, but eventually the choice must be made.

Another reason for the temporary halt in the price rise is the fact that the first rush of defense building is now over, with an easing of the pressure on materials and labor. The restriction on non-defense building is also having its effect. This however does not alter the fact that when present inventories are exhausted they must be replaced at higher cost.

We think there will be little change in construction costs this winter but we think that the upward movement will start again in the spring. The figures on the construction cost of our guinea pig house as shown in the Executive Digest should not be confused with the cubic foot costs shown on page 317 in this report. Those on page 317 are based on figures of the Home Loan Bank Board. For a complete discussion of the differences in the two, see the Real Estate Analyst for March 31, 1941, page 77.

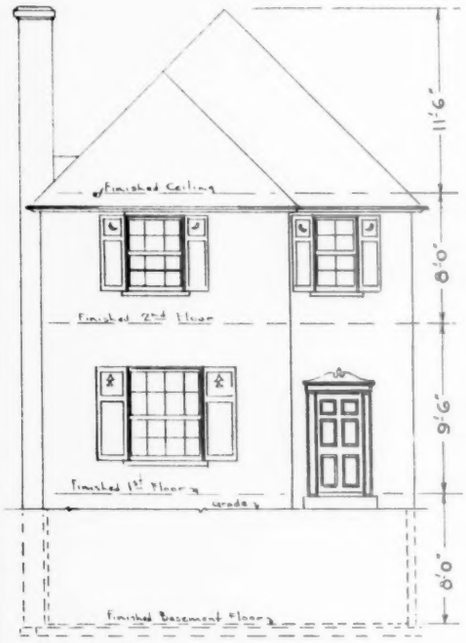
(cont. from page 308)

property is twenty-five years old and has a value of $5465. At this time the property is financed with a two-thirds loan amounting to $3600. Both Assumptions I and II, Chart C, are used as the fluctuations of construction costs during the next twenty years. Under both assumptions there appear to be substantial equities during the twenty-year life of the loan.

From these studies it appears that mortgage loans placed during the next year on new residential properties and on old residential properties not more than twenty-five years old are financially sound, provided (1) the properties are located in stable neighborhoods; (2) values are accurately appraised by competent appraisers; (3) the loan does not exceed two-thirds the appraised value of the property; (4) the amortization period of the loan does not exceed twenty years.

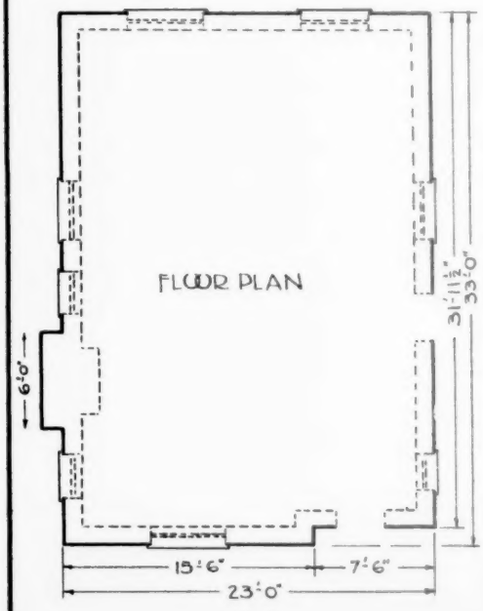
STANDARD METHOD OF DETERMINING CUBIC CONTENT OF A BUILDING

THE American Institute of Architects has defined the standard cubic contents of a building as follows: "The cubic content (cube or cubage) of a building is the actual cubic space enclosed within the outer surface of the outside or enclosing walls, and contained between the outer surfaces of the roof and six inches below the finished surfaces of the lowest floors." This definition requires the cube of dormers, penthouses, vaults, pits, enclosed porches and other enclosed appendages to be included as a part of the cube of the building. It does not include the cube of outside steps, cornices, parapets, open porches, balconies, fire escapes, paved terraces, etc. The cost of these items in using cost per cubic foot approximations should be estimated separately and added to the total.



FRONT ELEVATION

Scale in Feet



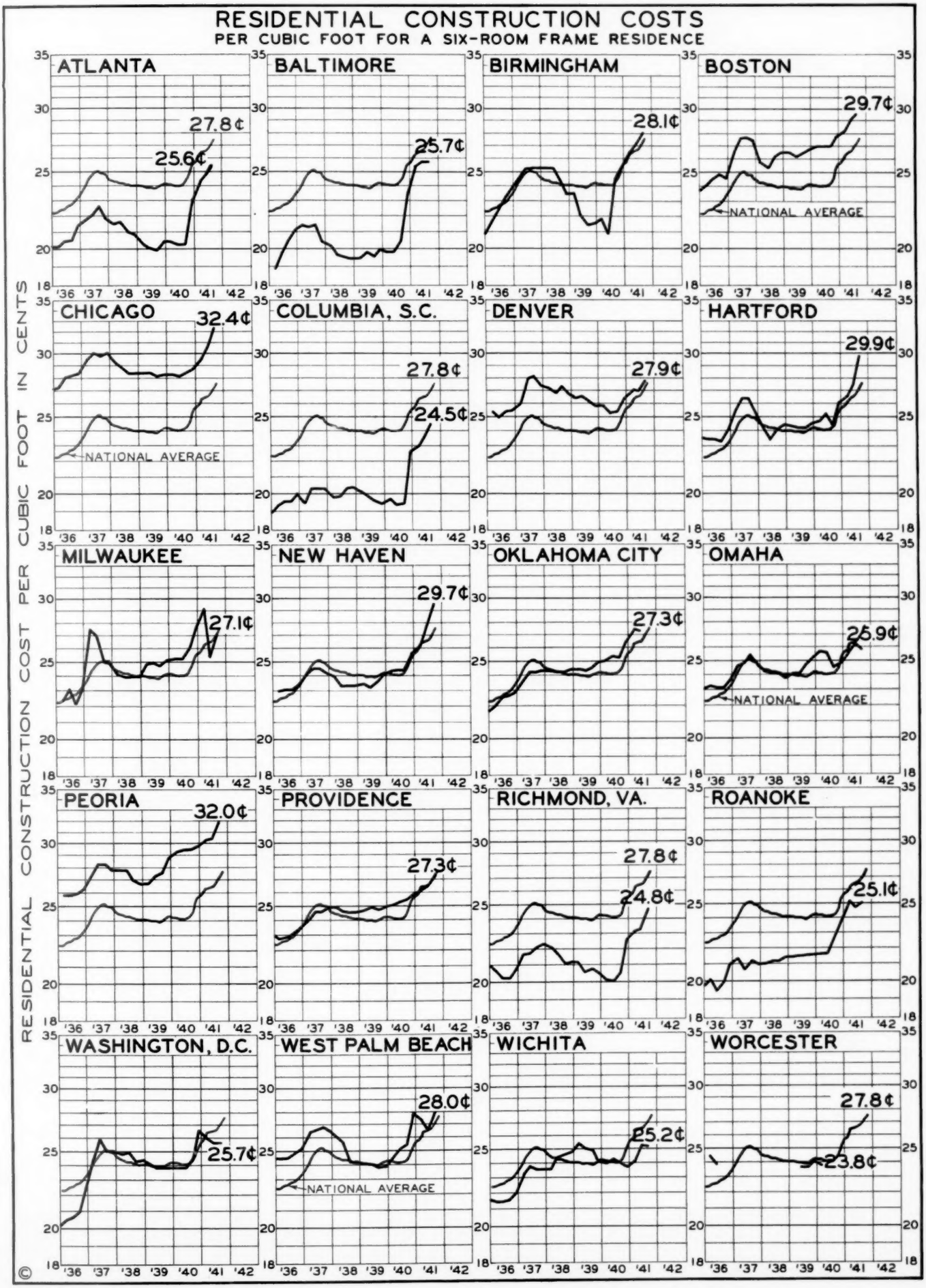
To secure the cubic content of the building to the right:

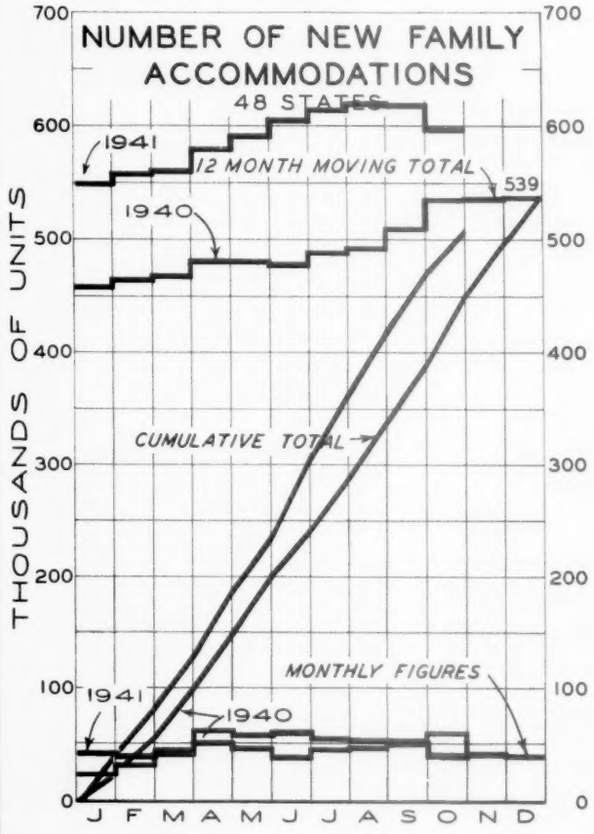
1. Compute the number of square feet in the floor plan. For all practical purposes, the chimney offset can be figured as just about balancing off the offset in the front of the building, which would simplify the problem to 23'x 33' = 759 s.f.

2. The height of the building to the roof is the sum of 8'0", 9'6" and 8'0", or 25'6". To this must be added 6", as the measurement is taken from 6" below the finished surface of the floor, making a total of 26'. Therefore, the cubage of the main portion of the building is 26'x 759 s.f. or 19,734 cubic feet.

3. The roof of this building is pyramidal in shape. Therefore the cubical content is determined by multiplying the area of the base by 1/3 of the height. (Were this roof a gable roof, the base area would be multiplied by 1/2 the height to find its cubic content.) The base area of the roof, 751½ square feet, multiplied by 1/3 of 11'6" amounts to 2878 cubic feet. Adding this to the cubage of the main portion of the building makes a total of 22,612 cubic feet. In this building, not shown on the plans reproduced here, is one other item which must be added. The garage was in the basement and a portion of the basement floor, 10½'x 16', was six inches lower than the balance. This increases the cubage 80 feet to a total content for the building of 22,692 cubic feet.

Cubic cost will vary greatly with design. A flat roofed residence without a basement will have a higher cost per cubic foot as the cubage omitted is less expensive to build than the cubage remaining.


RESIDENTIAL CONSTRUCTION COSTS
PER CUBIC FOOT FOR A SIX-ROOM FRAME RESIDENCE
RESIDENTIAL CONSTRUCTION COST PER CUBIC FOOT IN CENTS
ATLANTA
27.8¢
25.6¢
BALTIMORE
25.7¢
BIRMINGHAM
28.1¢
BOSTON
29.7¢
NATIONAL AVERAGE
CHICAGO
32.4¢
NATIONAL AVERAGE
COLUMBIA, S.C.
27.8¢
24.5¢
DENVER
27.9¢
HARTFORD
29.9¢
MILWAUKEE
27.1¢
NEW HAVEN
29.7¢
OKLAHOMA CITY
27.3¢
OMAHA
25.9¢
NATIONAL AVERAGE
PEORIA
32.0¢
PROVIDENCE
27.3¢
RICHMOND, VA.
27.8¢
24.8¢
ROANOKE
25.1¢
WASHINGTON, D.C.
25.7¢
WEST PALM BEACH
28.0¢
NATIONAL AVERAGE
WICHITA
25.2¢
WORCESTER
27.8¢
23.8¢
35
30
25
20
18
'36 '37 '38 '39 '40 '41 '42
©

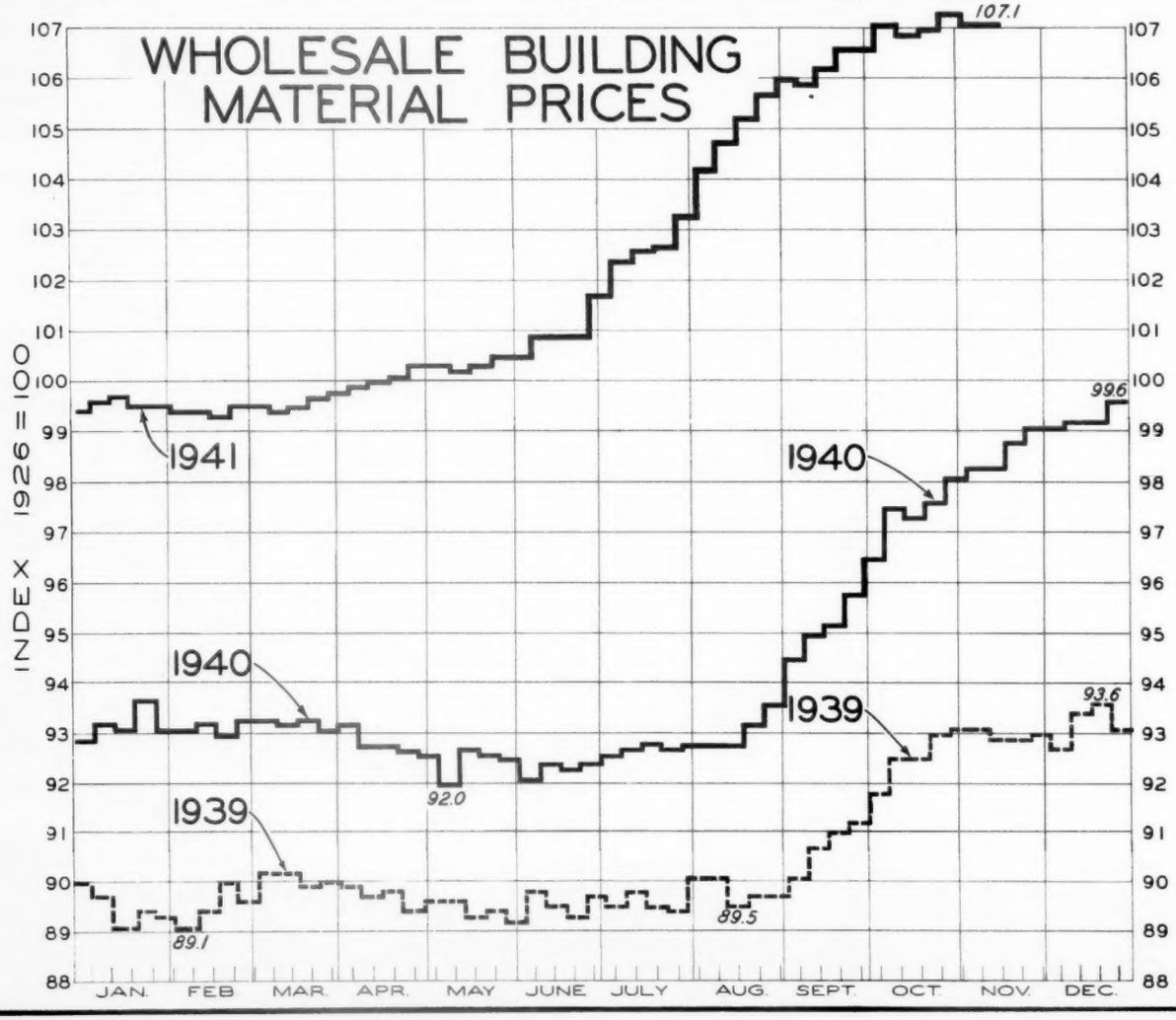


DWELLING UNITS CONSTRUCTED IN 48 STATES
(in thousands of units)

	Monthly			Cumulative			12 Month Moving Total		
	1939	1940	1941	1939	1940	1941	1939	1940	1941
January	30.1	25.7	40.4	30.1	25.7	40.4	345	461	553
February	29.2	33.7	40.2	59.3	59.4	80.6	359	465	560
March	39.4	42.0	45.9	98.7	101.4	126.5	375	468	564
April	36.6	51.1	63.6	135.3	152.5	190.1	386	482	576
May	49.6	49.1	57.9	184.9	201.6	248.0	409	482	585
June	40.6	38.8	61.5	225.5	240.4	309.5	422	480	608
July	38.1	48.9	57.0	263.6	289.3	366.5	423	491	616
August	46.2	49.4	54.8	309.8	338.7	421.3	435	494	621
September	35.7	53.0	52.1	345.5	391.7	473.4	435	511	620
October	36.1	62.4	42.4	381.6	454.1	515.8	439	537	600
November	42.5	42.7		424.1	496.8		450	538	
December	40.9	41.9		465.0	538.7		465	539	

THE number of new family accommodations built in all non-farm communities of the 48 states and the District of Columbia is shown in the table above and on the chart to the left. Cumulative totals and twelve month moving totals for 1940 (black) and 1941 (red) are given.

Shown on the chart below, wholesale building material prices-charted by weeks-as compiled by the Bureau of Labor Statistics, are now moving sideways.



NOVEMBER 27
1941

EXECUTIVE DIGEST

OF THE CURRENT REAL ESTATE ANALYST REPORTS

REAL ESTATE ANALYSTS, INC.

Real Estate Economists, Appraisers and Counselors

VOLUME X

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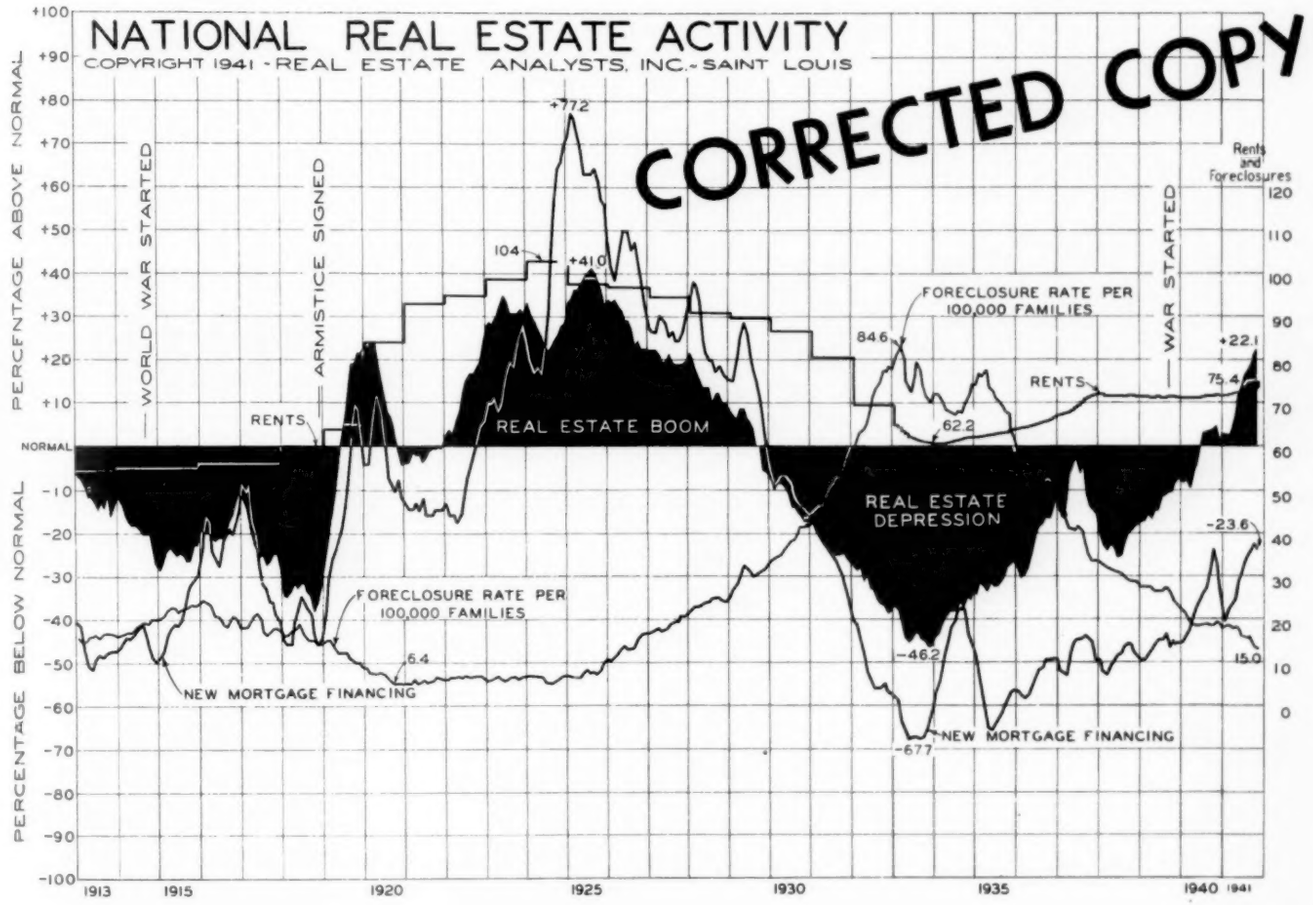
Roy Wenzlick
Editor



REAL estate sales have continued their climb but at a somewhat slower pace. At the first of November, the last national figure now available, they were 22.1% above our computed normal. The progress in some cities has been much more rapid than in others.

The foreclosure rate has dropped again, reaching a new low for the past fifteen years. There have been only seventeen years in the past seventy-one years when it has been as low or lower.

The volume of new mortgage financing dropped slightly, resulting of course from the drop in the volume of residential building. As long as the present restrictions remain, a large part of the mortgage business must necessarily be on refinancing of existing properties. We believe that there will be little change in these restrictions during the duration of the war. Shortages of critical materials, in our opinion, will become more severe during 1942 than

BUILDING COSTS OF A STANDARD SIX ROOM FRAME RESIDENCE BUILT IN ST. LOUIS

THE general description of this six-room colonial frame residence is as follows: the house proper has a cubic content of 23,792 cubic feet, and the attached garage of 1,575 cubic feet - a total cubic content of 25,376 cubic feet. This is considered a good, average house in the medium price class.

In brief the plans and specifications call for concrete foundations, concrete basement and garage floors; concrete slabs for front and rear stoops; frame exterior walls with 3/4" x 10" redwood siding, with stucco gable ends; three-coat plaster walls; oak flooring; pine B & B trim; 1 3/8" six-panel #1 pine doors; tile wainscote and floors in bathroom and lavatory; two kitchen cabinets; 266 lbs. asphalt shingle roof; modern bathroom fixtures; hot water heat; modern electrical installation; insulation in exterior walls and second floor ceiling.

The costs given in the accompanying table cover a complete structure except for the following items:

Walks and drives	Hot water heater and hot water tank
Electrical fixtures	Decoration to interior walls and ceilings

Several items of construction underwent changes during the twenty-seven years for which costs are given. Prior to 1921 a leg tub and wall lavatories were used instead of the full roll tub and pedestal type lavatory now specified. Prior to 1924, tile walls in bathroom and lavatory were omitted. Prior to 1930, insulation of both exterior walls and second floor ceiling was omitted. Copper has been in and out.

Costs are grouped into four classifications of material, four of labor and three of overhead. A further breakdown of these groups is given in detail below. Columns of the table are numbered, and a brief description of the items included in each is given in the paragraphs below. Paragraphs are numbered to correspond with the columns described. Building material costs are printed in black; the corresponding labor items are given in red. Overhead items - columns 18, 19 and 20 - are also printed in black.

* No labor items are shown in column 13, Building Hardware, as they have already been included in column 6, Mill Work.

Group A:
(1) Mason Materials: Cement, sand, gravel, quick lime, hydrated lime, hard wall plaster, face and common brick, fire brick, flue lining. Labor.
(2) Tile Materials: 4¼ x 4¼ wall tile, ceramic floor tile, cap and base. Labor.
(3) TOTAL OF GROUP A: Materials. Labor.

Group B:
(4) Unfinished Lumber: Columns, beams, floor and ceiling joists, interior and exterior studs, rafters, bracing, etc. Labor.
(5) Finished Lumber: Sub-flooring, sheathing, beveled siding, finished floors, asphalt shingle roofing, roofing felt, tar paper, shutters, etc. Labor.
(6) Mill Work: Windows, doors, trim, kitchen cabinet, stairs. Labor.
(7) TOTAL OF GROUP B: Materials. Labor.

Group C:
(8) Heating: Boiler, insulating jackets, fittings, tools, pipes, connections, valves and radiation. Labor.
(9) Plumbing: Soil pipes and connections, stack, water pipe and connections, lead oakum and bathroom fixtures; hot water heater and tank to be furnished by others. Labor.
(10) TOTAL OF GROUP C: Materials. Labor.

Group D:
(11) Sheet Metal: Copper gutters, downspouts, flashing. Labor.
(12) Electrical Work: Main switch, BX cable, switch boxes, receptacles, transformer, etc. No fixtures included. Labor.
(13) Nails and Hardware: Common and wire nails, bolts, damper, ash doors, finish hardware.*
(14) Paint Materials: White lead, linseed oil, turpentine. Labor.
(15) Misc.: Metal & wood laths, corner bead, insulation. Labor.
(16) TOTAL OF GROUP D: Materials. Labor.
(17) TOTAL COSTS: Materials. Labor.

Group E:
(18) Overhead and profit of subcontractors in plastering, metal work, heating, plumbing, electrical work and tile work.
(19) General contractor's profit.
(20) Missouri sales tax (now 2% on materials), old age and unemployment tax (federal and state), liability and employees' compensation insurance, fire and tornado insurance, completion bond.
(21) TOTAL OF GROUP E: Materials. Labor.
(22) TOTAL CONSTRUCTION COST.

BASEMENT PLAN FIRST FLOOR PLAN SECOND FLOOR PLAN

BUILDING COSTS OF A STANDARD SIX ROOM FRAME RESIDENCE BUILT IN ST. LOUIS

YEAR	GROUP A (1)		(2)		(3) TOTAL		GROUP B (4)		(5)		(6)		(7) TOTAL		GROUP C (8)		(9)		(10) TOTAL	
1913	$343	$388	$ 24	$ 13	$367	$401	$218	$101	$428	$134	$350	$121	$ 996	$356	$152	$136	$231	$110	$383	$246
1914	362	388	24	13	386	401	212	101	415	134	349	121	976	356	147	136	248	110	395	246
1915	360	388	24	13	384	401	189	105	373	145	329	131	891	381	152	144	249	116	401	260
1916	366	396	24	13	390	409	224	108	438	145	363	131	1025	384	203	144	309	116	512	260
1917	456	413	25	14	481	426	258	109	500	146	396	132	1154	387	244	152	359	122	603	274
1918	539	421	25	15	564	436	292	115	570	158	449	143	1311	420	322	152	359	124	681	276
1919	624	453	25	15	649	469	519	123	1008	170	729	154	2256	447	290	160	349	130	639	290
1920	742	463	28	17	770	480	607	183	1189	241	1030	220	2826	644	305	184	372	150	677	334
1921	674	501	25	18	699	519	479	188	920	260	506	225	1905	673	273	192	460	156	733	348
1922	609	506	25	18	634	524	362	174	703	252	571	209	1636	617	258	204	433	166	691	370
1923	633	576	25	21	658	597	410	200	793	288	551	242	1754	711	267	227	430	184	697	411
1924	613	703	251	108	869	811	401	246	779	328	492	295	1672	870	274	277	388	224	662	502
1925	606	684	251	108	857	792	375	201	732	532	472	302	1579	988	273	255	381	207	654	462
1926	566	663	251	108	817	770	379	240	732	320	432	288	1543	848	264	244	381	197	645	441
1927	565	621	251	108	816	729	354	228	715	504	358	279	1427	809	251	184	395	159	646	343
1928	563	541	208	97	771	639	406	194	644	244	377	220	1427	658	261	184	382	151	643	335
1929	565	541	185	97	750	639	360	184	687	244	384	220	1431	648	270	184	385	151	655	335
1930	474	422	185	97	659	519	340	136	655	181	312	164	1307	481	251	140	341	114	592	254
1931	411	342	155	57	566	400	313	108	594	145	254	131	1161	389	226	112	322	91	548	203
1932	438	342	139	51	577	394	268	108	532	145	269	131	1069	385	210	112	286	91	496	203
1933	457	342	130	51	587	394	355	108	562	145	344	131	1261	386	208	112	270	91	478	203
1934	540	342	122	51	662	394	439	108	713	145	494	131	1646	384	234	112	279	91	513	203
1935	508	422	111	67	619	489	399	139	638	181	523	164	1560	484	236	140	292	114	528	254
1936	506	490	111	67	617	557	364	159	655	209	494	188	1513	557	255	160	301	131	556	291
1937	503	512	111	67	614	579	395	186	742	245	578	221	1715	652	247	160	326	141	573	301
Ja 1938	500	425	103	67	603	492	369	162	693	210	591	189	1653	561	255	160	313	134	568	294
Ap 1938	500	428	103	67	603	495	343	162	633	210	592	189	1568	561	231	160	305	134	536	294
Jl 1938	516	428	103	67	619	495	343	162	631	210	549	169	1523	540	239	160	285	134	524	294
O 1938	516	417	103	67	619	483	343	142	631	185	550	167	1524	494	239	160	283	134	522	294
Ja 1939	515	417	103	77	618	494	353	142	642	185	525	167	1520	494	239	160	284	134	523	294
Ap 1939	510	561	103	77	613	638	345	164	644	219	509	198	1498	581	239	160	267	134	506	294
Jl 1939	516	561	103	77	619	638	346	164	639	219	508	198	1493	581	239	160	271	131	510	291
O 1939	510	561	103	77	613	638	395	164	713	219	509	198	1617	581	239	160	285	131	524	291
Ja 1940	510	538	103	77	613	614	374	158	679	215	567	195	1600	567	236	160	282	131	518	291
Ap 1940	510	538	103	77	613	614	371	158	651	215	566	195	1588	567	236	160	285	131	521	291
Jl 1940	510	538	103	77	613	614	371	158	651	215	566	195	1588	567	236	160	285	131	521	291
Ag 1940	510	556	103	77	613	633	415	158	735	215	604	195	1754	567	236	160	285	161	521	321
S 1940	510	556	145	77	655	633	448	158	736	215	604	195	1788	567	236	160	301	161	537	321
O 1940	510	542	145	86	655	628	494	162	763	218	628	197	1885	576	254	160	294	161	548	321
N 1940	510	542	145	86	655	628	493	162	805	218	646	197	1944	576	254	160	295	161	549	321
D 1940	510	640	145	86	655	726	493	182	805	243	645	219	1943	644	242	160	266	161	508	321
Ja 1941	515	640	145	86	660	726	493	182	808	243	645	219	1946	644	242	160	266	161	508	321
F 1941	515	639	145	86	660	725	493	182	753	243	633	219	1879	644	251	180	269	149	520	329
Mr 1941	487	639	145	86	632	725	465	182	748	243	633	219	1846	644	251	180	269	149	520	329
Ap 1941	487	639	159	86	646	725	463	182	771	243	633	219	1867	644	251	180	274	149	525	329
My 1941	508	639	159	86	667	725	448	197	732	265	635	240	1815	702	250	180	274	149	524	329
Je 1941	510	639	159	86	669	725	441	201	785	268	635	242	1861	711	250	180	274	149	524	329
Jl 1941	510	650	159	86	669	736	553	220	802	279	635	252	1990	751	250	180	274	149	524	329
Ag 1941	510	650	159	86	669	736	574	220	845	279	689	252	2108	751	262	180	292	149	554	329
S 1941	514	678	159	86	673	764	563	226	865	303	689	274	2097	803	262	200	289	187	551	387
O 1941	514	678	159	86	673	764	544	226	861	303	689	274	2094	803	262	200	289	187	551	387
N 1941	514	678	159	86	673	764	535	226	866	303	689	274	2090	803	262	200	289	187	551	387
D 1941																				

YEAR	GROUP D (11)		(12)		(13)	(14)		(15)		(16) TOTAL		(17) TOTAL		GROUP E (18)	(19)	(20)	(21) TOTAL	TOTAL (22) TOTAL
1913	$65	$12	$36	$49	$59	$16	$64	$51	$18	$227	$142	$1973	$1144	$248	$337	$132	$716	$3833
1914	59	12	32	49	59	16	64	50	18	216	142	1973	1144	248	337	132	716	3833
1915	68	12	38	52	64	17	69	48	19	235	153	1911	1199	257	337	135	729	3839
1916	101	12	55	52	86	22	69	59	19	323	153	2250	1206	295	375	142	812	4269
1917	108	12	59	54	110	26	69	69	19	372	156	2610	1243	325	418	152	896	4749
1918	95	14	52	54	118	30	75	73	21	368	165	2924	1296	346	457	163	965	5185
1919	83	15	45	57	113	31	81	112	23	384	176	3928	1386	342	566	187	1095	6409
1920	83	21	46	66	143	36	116	132	32	440	236	4713	1695	366	677	227	1270	7678
1921	64	22	35	69	94	30	119	104	33	327	243	3664	1772	372	581	215	1168	6604
1922	64	20	35	73	79	28	111	81	31	287	235	3248	1744	370	536	205	1111	6102
1923	70	22	38	81	94	28	128	90	36	320	268	3429	1987	407	582	228	1218	6634
1924	64	28	35	100	97	35	156	87	44	318	328	3521	2510	527	656	274	1456	7487
1925	68	29	37	92	89	37	159	83	45	314	325	3401	2466	508	638	267	1413	7280
1926	69	27	37	87	86	36	152	83	43	311	310	3316	2359	499	617	254	1370	7045
1927	67	26	37	66	84	33	145	80	41	301	277	3190	2157	469	582	237	1288	6635
1928	71	21	39	66	85	31	116	74	32	300	237	3141	1858	438	544	213	1194	6194
1929	82	21	45	66	89	33	116	71	32	320	237	3156	1868	438	545	213	1195	6210
1930	71	15	39	50	72	33	87	211	24	426	177	2984	1431	380	479	175	1034	5449
1931	58	12	32	40	61	31	70	198	39	380	161	2655	1150	317	412	146	875	4680
1932	50	12	28	40	60	28	70	199	39	365	161	2507	1143	295	395	142	832	4482
1933	52	12	28	40	54	26	70	214	39	374	161	2700	1143	291	413	146	850	4693
1934	55	12	30	40	63	26	70	222	39	396	161	3217	1143	299	466	154	919	5279
1935	43	15	24	50	62	26	87	229	47	384	200	3091	1423	300	481	174	956	5469
1936	50	19	28	57	59	27	98	221	53	385	228	3071	1633	344	505	239	1087	5791
1937	54	22	29	57	64	31	104	226	53	404	236	3306	1768	363	544	310	1217	6291
Ja 1938	48	19	26	57	68	29	88	223	42	394	207	3218	1557	344	512	315	1171	5946
Ap 1938	45	19	25	57	68	27	88	222	42	387	207	3094	1557	335	490	310	1135	5786
Jl 1938	45	19	25	57	64	27	88	221	42	382	207	3048	1536	328	489	301	1119	5703
O 1938	48	17	26	57	64	28	88	221	42	387	205	3052	1476	326	484	296	1106	5634
Ja 1939	49	17	27	57	64	28	88	192	42	360	205	3021	1487	329	482	297	1107	5615
Ap 1939	48	19	26	57	64	29	116	192	61	359	253	2976	1766	348	507	329	1184	5926
Jl 1939	46	19	26	57	64	29	116	191	61	356	253	2978	1763	346	507	329	1182	5923
O 1939	52	19	29	57	65	30	116	193	61	369	253	3123	1763	353	522	335	1209	6096
Ja 1940	58	17	32	57	65	30	93	193	61	378	229	3109	1702	352	516	327	1194	6005
Ap 1940	63	17	35	57	65	30	93	193	61	386	229	3108	1702	352	516	327	1194	6004
Jl 1940	63	17	35	57	65	30	93	193	61	386	229	3108	1702	352	516	327	1194	6004
Ag 1940	63	17	31	57	66	30	93	201	69	390	237	3278	1758	361	540	342	1242	6278
S 1940	63	17	31	57	66	30	93	195	69	385	237	3368	1758	379	551	345	1274	6400
O 1940	63	17	31	57	66	32	93	203	75	395	242	3483	1768	385	564	351	1300	6551
N 1940	62	17	27	57	66	32	93	203	75	390	242	3538	1768	385	569	351	1305	6611
D 1940	62	19	27	58	66	32	104	203	78	390	259	3496	1950	380	585	375	1340	6786
Ja 1941	62	19	28	58	67	33	104	203	78	393	259	3507	1950	380	585	375	1340	6797
F 1941	62	19	28	63	69	33	131	203	78	395	291	3454	1989	387	583	376	1346	6789
Mr 1941	62	19	28	63	69	33	131	202	79	394	292	3392	1990	388	577	374	1339	6721
Ap 1941	62	19	28	63	69	33	131	202	79	394	292	3432	1990	396	581	376	1353	6775
My 1941	62	19	23	63	72	33	131	205	79	395	292	3401	2048	396	585	381	1362	6811
Je 1941	73	19	25	63	72	33	131	203	79	406	292	3460	2057	396	591	384	1371	6888
Jl 1941	90	19	27	63	72	34	131	220	79	443	292	3626	2108	396	613	397	1408	7142
Ag 1941	90	19	27	63	72	34	131	220	79	443	292	3774	2108	406	629	400	1435	7317
S 1941	106	29	33	72	79	35	131	221	79	474	311	3795	2265	433	649	422	1504	7584
O 1941	106	29	34	72	80	35	145	227	79	482	325	3800	2279	433	650	422	1505	7584
N 1941	106	29	39	72	79	35	145	227	79	486	325	3800	2279	433	650	422	1505	7584
D 1941																		